WHAT IS COMPUTER SCIENCE?
Computer science spans the range from theory through programming to cutting-edge development of computing solutions. Computer science offers a foundation that permits graduates to adapt to new technologies and new ideas. The work of computer scientists falls into three categories:
1) Designing and building software
2) Developing effective ways to solve computing problems, such as storing information in databases, sending data over networks or providing new approaches to security problems
3) Devising new and better ways of using computers and addressing particular challenges in areas such as robotics, computer vision, or digital forensics (although these specializations are not available in all computer science programs)
Most computer science programs require some mathematical background.
*Information from: https://www.acm.org/binaries/content/assets/education/computing-disciplines.pdf

NEEDED SKILLS:
- Computer programming skills, including familiarity with both software and hardware
- Algorithmic thinking
- Problem solving
- Communication and interpersonal skills
- Data analysis
- Mathematical and logical reasoning
- Teamwork**

INDUSTRIES AND OCCUPATIONS
- Computer systems design
- Software industry
- Scientific research
- Federal Government
- Data processing, hosting, and internet services
- Computer hardware industry
- Business consulting & management
- Financial institutions **

JOB TITLES
- Computer Scientist
- Software Engineer
- Software Developer
- Artificial Intelligence Specialist
- Computational Linguist
- Information Scientist **

SALARIES
$110,620 *
The nationwide average salary for employees with a bachelor’s degree in Computer Science Engineering

$97,377
UM graduates average starting salaries
*Courtesy of the Engineering Career Resource Center
**Information from: www.myplan.com

JOB OUTLOOK
Employment of computer scientists is expected to grow 11% from 2014 to 2024, faster than the average for all occupations. Computer scientists are likely to enjoy excellent job prospects, because many companies report difficulties finding these highly skilled workers.

MORE INFORMATION
- www.myplan.com
- stats.bls.gov/ooh
- http://www.acm.org (Association for Computing Machinery)
- Engineering Career Resource Center, 230 Chrysler
- See a CS-Eng advisor by booking an appointment at webapps.lsa.umich.edu/AdvAppts/AA_StuSelFSvc1.aspx?ctgy=EECS
- EECS Undergraduate website: eecs.umich.edu/eecs/undergraduate/index.html

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Updated June 2019
WHICH CS CLASSES SHOULD YOU TAKE FIRST?
To begin the CS major, a good option is to first take EECS 203 and EECS 280, followed by EECS 281, and a choice of EECS 370 or EECS 376. TECHNLCLM 300 or STATS 250 (STATS 412 can also be used for this requirement, and should be taken instead of 250 particularly if you are considering Data Science as an alternative major to CS) are two other additional options. Read more about the CS major and EECS Department at: http://www.eecs.umich.edu/

EECS 203  –  4 credits
Discrete Math
Prerequisite: (MATH 115 or 116 or 119 or 120 or 121 or 156 or 175 or 176 or 185 or 186 or 214 or 215 or 216 or 217 or 255 or 256 or 285 or 286 or 295 or 296 or 417 or 419.) C or better.

Introduction to the mathematical foundations of computer science. Topics covered include propositional and predicate logic, set theory, function and relations, growth of functions and asymptotic notation, introduction to algorithms, elementary combinatorics and graph theory, and discrete probability theory.

EECS 280  –  4 credits
Programming and Introductory Data Structures
Prerequisite: (ENGR 101 or ENGR 151 or EECS 180 or EECS 183). C or better. Fewer than two previous elections of EECS 280 (incl. grades of W, I, VI, and AUD).

Algorithm development and effective programming, top-down analysis, structured programming, testing and program correctness. Program language syntax and static and runtime semantics. Scope, procedure instantiation, recursion, abstract data types and parameter passing methods. Structured data types, pointers, linked data structures, stacks, queues, arrays, records and trees.

EECS 281  –  4 credits
Data Structures and Algorithms
Prerequisite: (EECS 203 or Math 465 or Math 565) and EECS 280. C or better in both, with minimum GPA of 2.5 over the best grade for each enforced prerequisite. Fewer than two previous elections of EECS 281 (incl. grades of W, I, VI, and AUD).

Introduction to algorithm analysis and O-notation; fundamental data structures including lists, stacks, queues, priority queues, hash tables, binary trees, search trees, balanced trees and graphs, searching and sorting algorithms, recursive algorithms, basic graph algorithms, introduction to greedy algorithms and divide and conquer strategy. Several programming assignments.

EECS 370  –  4 credits
Introduction to Computer Organization
Prerequisite: (EECS 203 or Math 465 or Math 565) and EECS 270 and EECS 280. C or better.

Basic concepts of computer organization and hardware. Instructions executed by a processor and how to use these instructions in simple assembly-language programs. Stored-program concept. Datapath and control for multiple implementations of a processor. Performance evaluation, pipelining, caches, virtual memory, input/output.

EECS 376  –  4 credits
Foundations of Computer Science
Prerequisite: EECS 280 and (EECS 203 or Math 465 or Math 565). C or better.